

1. Air

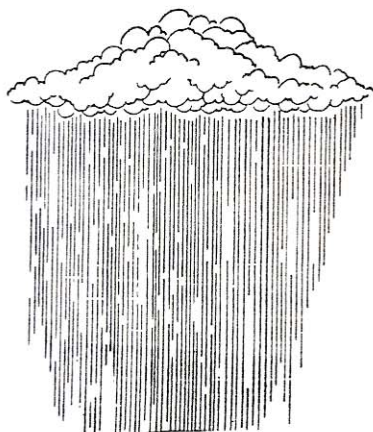
Traits: Air is made up of several gases, including nitrogen (78%), oxygen (21%), rare gases ((0.9%), and carbon dioxide (0.03%).

Occurrences: Air surrounds us, but we rarely notice it.

Values: The thin layer of air that blankets the earth makes the earth suitable for life, by providing the oxygen and carbon dioxide needed by living things, by trapping heat from the sun, and by blocking out high intensity (ultraviolet) light rays that are harmful to living things.

Conservation Problems: Burning of wood and fossil fuels (oil, gas, and coal), and other activities of people, can pollute the air. Pollution may be changing the earth's atmosphere and could thus harm climates and living things.

"Gee Whiz": Although the sky above us looks endless, the earth's atmosphere is actually very thin. On a scale model of the earth the size of an apple, the atmosphere would be the same thickness as an apple skin.



2. Water

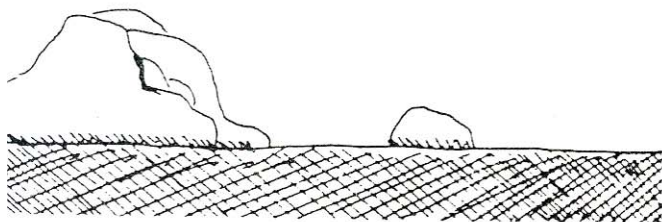
Traits: Water molecules are made up of two atoms of hydrogen and one atom of oxygen. Water is a solid (ice) at temperatures below freezing (32 F, 0 C), a liquid above this, becomes a gas at temperatures above 212 F (100 C).

Occurrence: Water occurs in the air as clouds, rain, and snow. It forms lakes, streams, rivers, and oceans. It also occurs in the soil and deep underground in the water table.

Values: All living things need water for most life processes. Most living things are made up of 70% water.

Conservation Problems: Disposal of wastes in or near water supplies, or in the air, can pollute water and make it poisonous to living things.

"Gee Whiz": Water cycles continuously from clouds to rain or snow to rivers, lakes, and oceans, then back to clouds. Today we are using the same "recycled" water that dinosaurs used thousands of years ago.



3. Soil

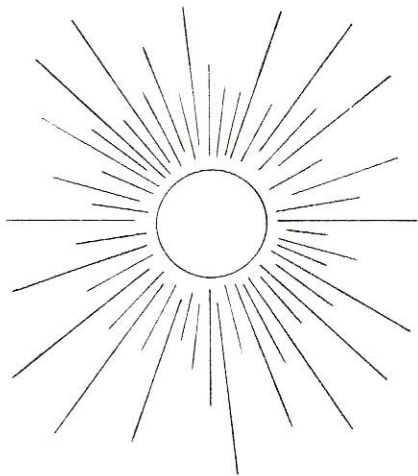
Traits: Rocks are made up of elements and compounds that form solids under most of the conditions on earth. Wind and water erosion change rocks into fine sand and clay particles, the basis of soils. Some soils are enriched by nutrients from decomposed plants, animals, and other living things.

Occurrence: The earth is made of solid and (in its core) molten rock. Much of the land on earth is covered by soil, but different kinds of soil occur; e.g. desert soils are mostly sand.

Values: Most plants require soil to grow. It provides them a place to anchor, and is their source for minerals and water.

Conservation Problems: Soil takes thousands of years to form from rocks and decomposition, but can be quickly washed or blown away by rains and wind.

"Gee Whiz": A teaspoon of soil may contain 3-10 billion microscopic organisms, as well as, hundreds of tiny invertebrate animals.



4. Sun

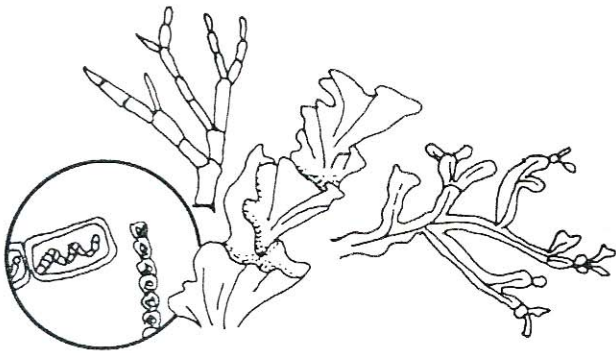
Traits: The sun is a dwarf, yellow star, essentially a very dense ball of gases and dust. Thermonuclear reactions in the sun give off tremendous amounts of heat and light energy. The sun is about 109 times the size of the earth.

Occurrences: The sun is located in the center of our solar system, 93 million miles from our planet, Earth. It takes light from the sun eight minutes to reach earth.

Values: Plants, and other producers, capture the energy in sunlight and, through photosynthesis, store it in the form of sugar. They, and all other living things, use this "stored sunlight energy" to grow and reproduce.

Conservation Problems: Pollution of the earth's atmosphere with chemicals made by people may change the amount and kinds of solar energy reaching the earth. This could change the earth's climates, or allow more ultraviolet light (which harms living things) to reach the earth's surface.

"Gee Whiz": The amount of solar energy striking the earth every day is about 1.5 billion times greater than the amount of electricity generated each year in the United States.



7. Green Algae

Traits: Single-celled organisms capable of photosynthesis. They occur individually, in filaments, and in colonies. The cells store food in the form of starch.

Habitat: Often occur wherever water occurs. Some grow in damp or moist soil or in tree bark.

Food: Make their own by photosynthesis.

Eaten by: Protozoans, roundworms, small crustaceans, certain mollusks, other aquatic invertebrates, fish, geese, ducks, and other water birds.

"Gee Whiz": Green algae were once considered a kind of plant, but they did not have the same kinds of cells and do not have specialized conducting tissues to move water and food from one part of the organism to another. Today, most biologists classify green algae in the kingdom "Protista" - a group that includes many microscopic organisms.



16. Sedges

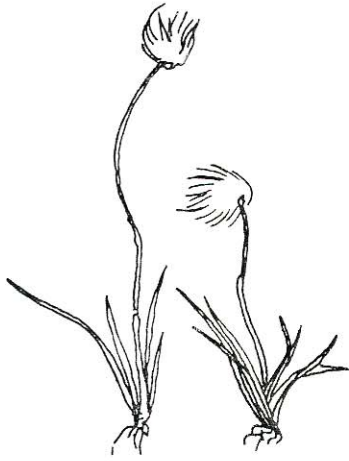
Traits: Herbs with long, narrow leaves, with parallel veins, and solid, usually triangular stems. Vary from 1 to 39 inches (2.5-99 cm) in height. The tiny inconspicuous flowers grow in clusters.

Habitat: Grows in shallow water, mud, or moist soil of fresh or salt water wetlands.

Food: Make their own by photosynthesis.

Eaten by: Caribou, muskoxen, ground squirrels, lemmings, voles, geese; also seed-eating birds such as snow buntings, longspurs, and rosefinches.

"Gee Whiz": The long, narrow leaf shape of sedges reduces fraying by strong winds.



18. Cotton Grass

Traits: Herbaceous plants with long, narrow leaves, and solid stems. Tiny, inconspicuous flowers grow in tight clusters. This mis-named sedge has tufts of white cotton-like bristles on the seeds.

Habitat: Wet tundra, muskegs, coastal wetlands, and stream or lake margins.

Food: Make their own by photosynthesis.

Eaten by: Caribou, muskoxen, lemmings, voles, geese, and seed-eating birds such as longspurs, redpolls, and snow buntings.

"Gee Whiz": The cotton-like seeds of these sedges are dispersed by the wind. Tussocks formed by cottongrass provide shelter and nest sites for small tundra birds and mammals.



34. Bearberry

Traits: Low-growing shrub with evergreen or persistent deciduous leaves. Small, bell-shaped flowers. The fruit is an edible berry. A member of the heath or heather family. Height to 2-3 inches (5-7.5 cm).

Habitat: Grows on dry and moist soil in alpine and lowland tundra, forests, and muskegs.

Food: Make their own by photosynthesis.

Eaten by: Bears, voles, lemmings, ptarmigan, geese, plovers, and other birds.

"Gee Whiz": Bearberry plants depend on fungi to help them obtain nutrients from the soil. They provide sugars to the fungi in exchange.



36. Willow

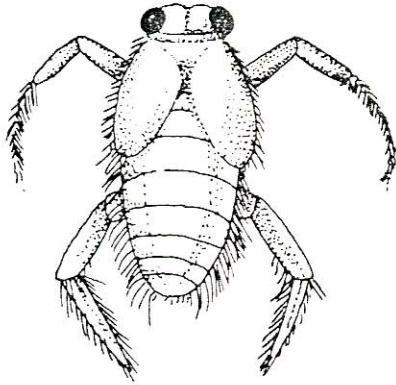
Traits: Willows are low to tall shrubs with deciduous leaves. Most have long, narrow leaves. There are separate male and female plants.

Habitat: In wetlands, forests and tundras throughout northern regions of the world. Most willows prefer moist or wet sites.

Food: Make their own by photosynthesis.

Eaten by: Musk oxen, caribou, moose, snowshoe hares, ptarmigan, redpolls.

"Gee Whiz": Willow bark contains salicylic acid, the active ingredient in aspirin. Willow bark was used as a painkiller at least 2400 years ago.



43. Water Boatman

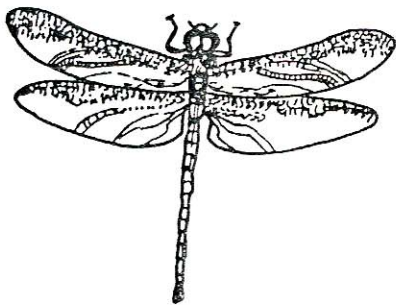
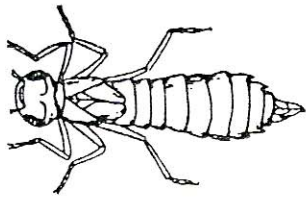
Traits: Aquatic insect with front legs modified to form scoops and two long pairs of legs used for swimming. The larvae and adults look alike.

Habitat: Margins of lakes, ponds and estuaries.

Food: Algae, insect and crustacean larvae, detritus.

Eaten by: Diving beetles, frogs, fish, waterfowl, and shore birds.

"Gee Whiz": Water boatmen are like scuba divers. They trap an air bubble under their wings at the water surface then use this "air tank" to breathe while diving underwater.



48. Dragonfly

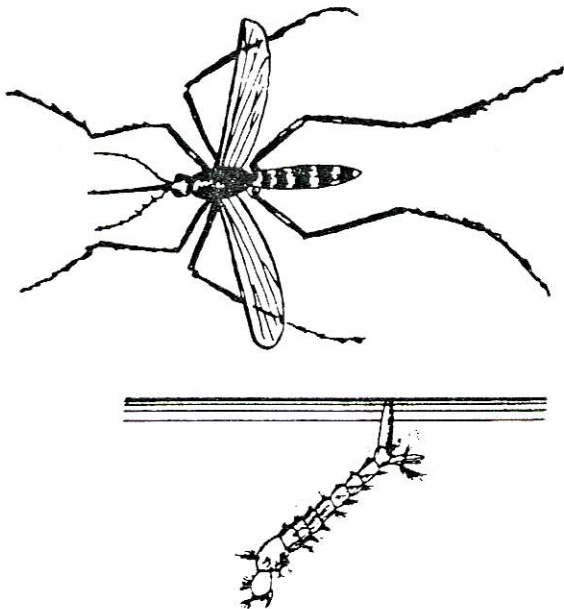
Traits: Adults 3/8 - 2 1/2 inches long. Long, narrow abdomen. They hold their wings at right angles to their body. Hind wings broader at base than forewings. Three pairs of legs, large eyes, and four wings. Larvae have no visible gills at the base of the abdomen.

Habitat: Larvae live on the bottom of streams and ponds or on aquatic plants. Adults live near water.

Food: Larvae prey on mosquito larvae, snails, tadpoles and small fish. Adults prey on small flying insects including mosquitos and blackflies.

Eaten By: Slimy sculpin and other fishes. Swallows eat adults. Dippers feed on larvae.

"Gee Whiz": Adults catch mosquitos in the air with their basket-like legs.



52. Mosquito

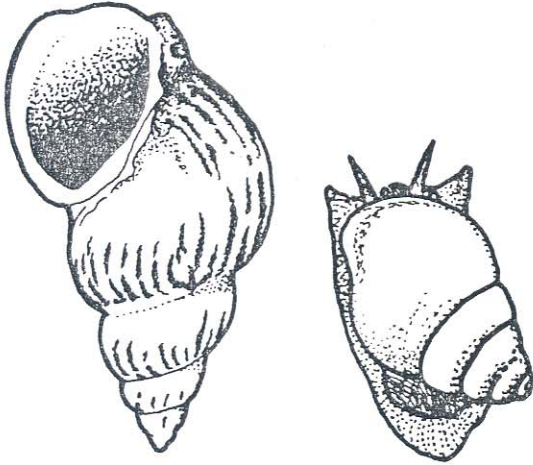
Traits: Insect that have worm-like larvae and adult forms with scales and a long, tubular mouthpart (proboscis) for sucking.

Habitat: Most larvae are aquatic and live in ponds, lakes, puddles, and still water along rivers and streams.

Food: Larvae feed on algae, protozoans, and detritus. Adult males feed on flower nectar. Adult females suck blood from birds and mammals.

Eaten by: Larvae are food for other aquatic insects, fish, and waterbirds. Adults are eaten by dragonflies, fish, frogs, swallows shore birds, warblers, and bats.

"Gee Whiz": Male mosquitos pollinate flowers. Female mosquitos can carry certain microscopic organisms that cause diseases in mammals and birds.



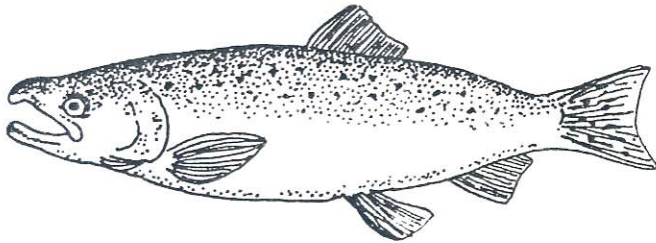
58. Snail

Traits: Mollusk with flat creeping foot, one-piece shell, and well-developed head. Length: 1/2 to 5 inches (1.3-12.7 cm).
Habitat: Snails live on land as well as in water. Most aquatic snails live on rocks on sandy or silty bottoms, or on aquatic plants in either fresh water or salt water.

Food: Most freshwater snails graze on algae, aquatic plants, detritus, and fungi. Some marine forms prey on other marine animals, including other mollusks.

Eaten by: Crustaceans, fish, birds, and mammals.

"Gee Whiz": There are over 35,000 living species of snails.



63. Chum Salmon

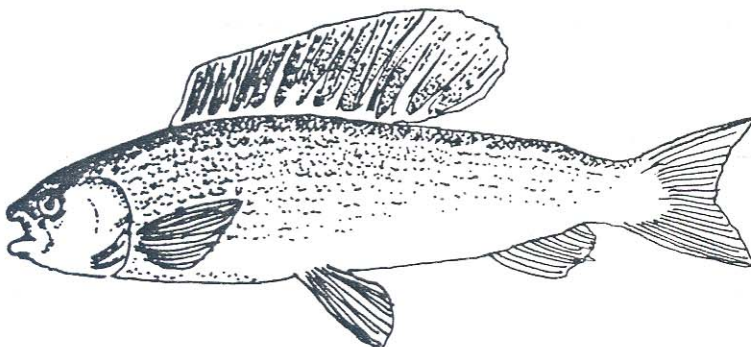
Traits: This salmon species is 24 - 28 inches (60 - 70 cm) and 10 - 13 lbs. (4.5 - 6 kg). Adipose fin, absence of spots on body and fins; all fins, except dorsal, have dark tips.

Habitat: Adults live at sea but move into fast-flowing freshwater streams to spawn. Young to sea shortly after leaving the gravel and mature in estuaries.

Food: At sea, chum salmon feed on small crustaceans including copepods, euphausiids, amphipods, squid, crab larvae, young herring, and other fishes. During migration out to sea the fry eat insects (including midge larvae and water fleas) and copepods.

Eaten By: Eggs are eaten by Arctic grayling. Young are eaten by other salmon. Adults are eaten by orca and beluga whales, eagles, bears, and humans.

"Gee Whiz": Known as "dog salmon" and are a traditional source of dried food for winter use as dog food. Some Chum Salmon swim 2,000 miles up the Yukon River to spawn.



67. Arctic Grayling

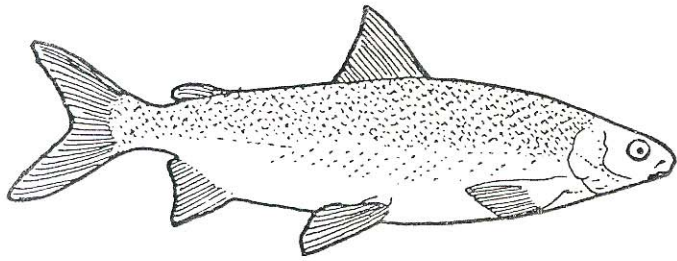
Traits: Graylings reach 12 - 14 inches (30 - 35 cm) and 1 - 1.5 lbs. (0.5 - 0.7 kg). Adipose fin; large sail-like dorsal fin; small mouth. Dorsal fin dotted with large iridescent red or purple spots.

Habitat: Cold, clear streams, lakes, and ponds. Spawns in streams with sandy gravel bottoms.

Food: Mayflies, stoneflies, caddisflies, salmon eggs, salmon smolts. Voles or shrews that fall into the water.

Eaten By: Young eaten by larger fish, loons, grebes, and mergansers. Adults are eaten by humans.

"Gee Whiz": Grayling make long migrations upstream to spawn in freshwater streams in Alaska.



75. Whitefish

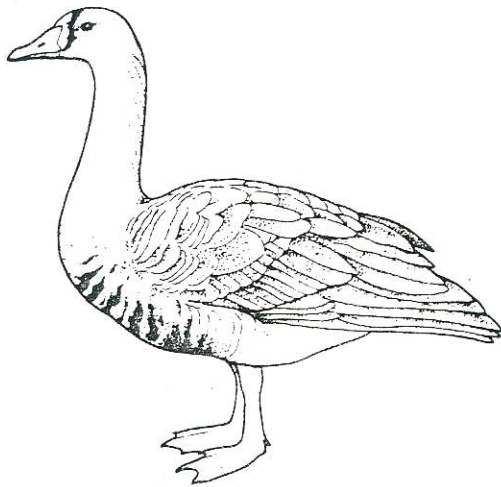
Traits: Fish with slender, rounded bodies, large scales, forked tails, and small mouths with the upper jaw overlapping the lower jaw.

Habitat: Lakes, streams, and estuaries.

Food: Mainly insects, including larval mayflies, stoneflies, midges, dragonflies, and mosquitoes; also eggs and larvae of other fish.

Eaten by: Lake trout, burbot, arctic char, and people. Fry are eaten by fish-eating birds, such as mergansers and grebes.

"Gee Whiz": Most whitefishes migrate long distances up and down rivers between feeding and spawning grounds. Some migrate to saltwater feeding areas, but spawn and overwinter in freshwater.



77. Greater (Pacific) White-fronted Goose

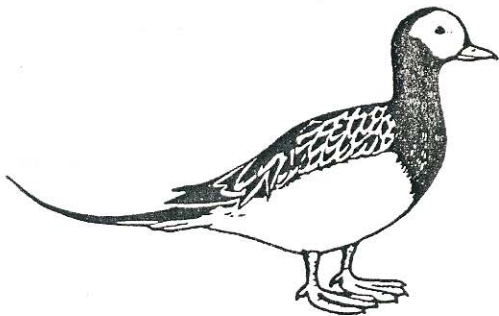
Traits: Medium-sized, grey-brown goose with orange legs and feet. Named for the white band at the base of the bill.

Habitat: Nests in coastal and inland wetlands and tundra. Winters in wetlands and agricultural fields in central California.

Food: Summer: feeds on grasses, sedges, leaves, berries, seeds, and roots of many aquatic plants. Winter: seeds of rice, water grass, milo, barley, and marsh plants such as rushes and cattails.

Eaten by: Foxes, gulls, jaegers, ravens, and people.

"Gee Whiz": White fronts are also called "speckle-bellies" or "tiger bellies" because of the dark brown bars on their undersides.



85. Oldsquaw

Traits: Stocky, diving duck with black and white plumage.

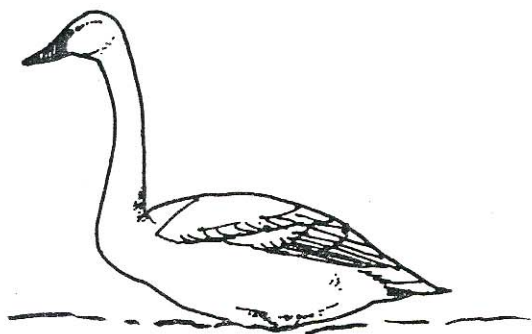
Length: Male is 22 inches (56 cm) and female is 16 inches (41 cm). The long tail of the male is noticeable during flight.

Habitat: Ponds and lakes of lowland and alpine tundra in summer, at sea in winter.

Food: Mussels, clams, snails, and crustaceans are their main foods. In fresh water they also eat larvae of midges, crane flies, caddisflies, and other insects.

Eaten by: Eggs and young eaten by foxes, weasels, gulls, jaegers, and ravens.

"Gee Whiz": Oldsquaw may dive deeper than any other duck. They have been recorded at depths of 72-240 feet (73 m).



83. Tundra Swan

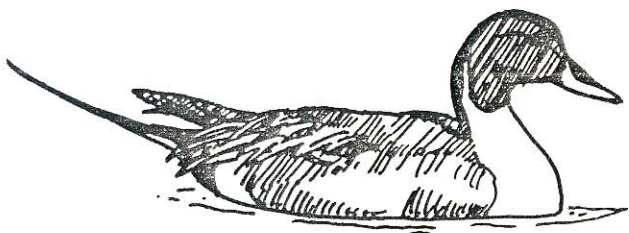
Traits: Large aquatic bird (6 - 7 ft. wingspan) with all-white plumage and very long neck. Bright yellow spot on black bill.

Habitat: Lowland tundra, small islands, ponds, lakes, rivers during summer. Winters mainly in California, Maryland, North Carolina, and Virginia.

Food: Leaves, seeds, and underground roots of horsetails, pondweed, sedges, rushes, pond lily, and water milfoil. Young eat invertebrates, then switch to plants.

Eaten By: Adults eaten by foxes. Young eaten by foxes, minks, and gulls.

"Gee Whiz": Once paired, mates tend to stay together for life.



84. Pintail

Traits: A large slender duck. Male has white breast and brown head with long pointed tail.

Habitat: In summer, grasslands, tundra, sandy flats, lakes, ponds, and marshes. Winters in salt and brackish waters along coast.

Food: Eats 90% plant foods including: seeds of sedges, grasses, pondweeds, smartweeds, and grain. Will eat aquatic invertebrates, insects.

Eaten By: Adults eaten by foxes, eagles, minks, and humans. Young eaten by gulls, jaegers, and foxes.

"Gee Whiz": Most widely distributed duck in North America.



87. Merganser

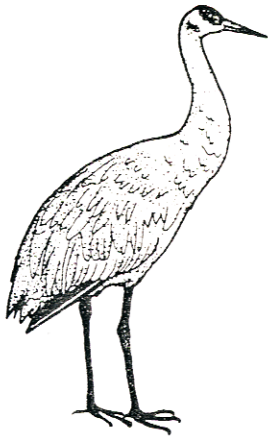
Traits: 16 - 27 inches (40 - 67.5 cm) and 1.75 - 3.5 lbs. (0.8 - 1.6 kg). Long bill with saw-tooth edges; hooked tip; webbed feet; most have a crest on head; unable to take off from land.

Habitat: Nests on ground (red-breasted) or in hole in tree near river, lake, or estuary. Winters along coast and on large inland lakes and rivers of lower 48.

Food: Sticklebacks, sculpins, eels, eulachon, herring, black-fish, frogs, crustaceans, snails, insects, and leeches.

Eaten By: Foxes eat adults on the nesting grounds. Young eaten by foxes, weasels, and gulls.

"Gee Whiz": Mother mergansers will sometimes carry young from nest to water in her bill.



92. Sandhill Crane

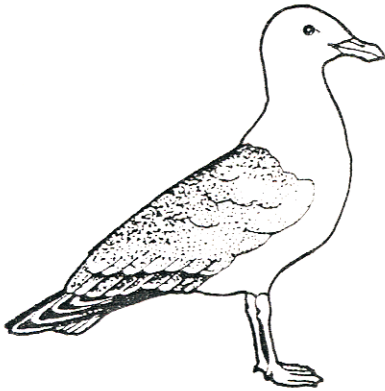
Traits: Large gray bird with long neck and legs, red skin on crown, whitish chin, cheek and upper throat.

Habitat: Lowland tundra, muskeg, and river bottoms in summer; migrates to plains and coast of Lower 48 during winter.

Food: Shoots, roots, and seeds of wetland plants, lemmings, voles, insects, and frogs.

Eaten by: Foxes, wolves; eggs eaten by jaegers, gulls and people.

"Gee Whiz": Some radio tagged sandhill cranes in Tennessee traveled 363 miles (584 km) non-stop in 9.5 hours.



96. Glaucous Gull

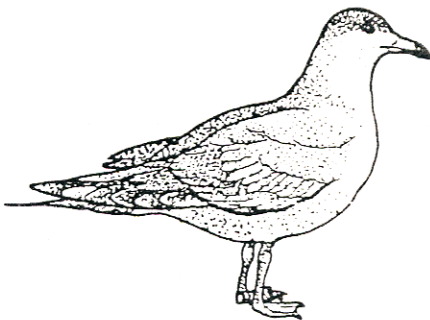
Traits: Large bird with pale grey wings and mantle. Light can be seen through the white wing tips.

Habitat: Wetlands in tundra, forest, and coastal areas.

Food: Mainly dead animals, eggs and young of other birds; also crustaceans, insects, and fish; gulls are scavengers.

Eaten by: Foxes, weasels, bears, jaegers, and falcons.

"Gee Whiz": Gulls can stand on ice and still keep warm because of a special arrangement of the blood vessels in their legs. The arteries surround the veins, so that the cold blood returning from the feet is warmed before reaching the gull's body.



97. Parasitic Jaeger

Traits: Seabird with strongly hooked bill and long, pointed, angled wings; long central tail feathers.

Habitat: Alpine and lowland tundra throughout Alaska: pelagic (at sea) in winter.

Food: During summer, jaegers prey on lemmings and small birds and eat the eggs and young of geese, ducks, and shore birds. In other seasons, they prey on small sea birds and steal fish from large sea birds.

Eaten by: Eggs and young may be eaten by foxes, bears, and gulls.

"Gee Whiz": Jaegers migrate from tundra nesting areas to wintering areas at sea in both the northern and southern hemispheres.



109. Moose

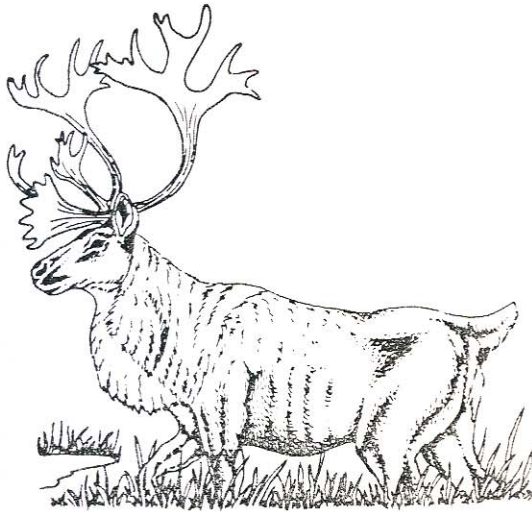
Traits: Large hoofed mammal, long legs, drooping nose, large palmate antlers on male in fall.

Habitat: Prefers tall shrub thickets that grow 10 to 20 years after a fire or other disturbance and thickets along rivers; also seeks shelter in forests, particularly during winters with heavy snowfall.

Food: Browses on woody vegetation, especially willow, birch, and aspen. In spring, grasses, sedges, horsetails, and aquatic plants.

Eaten by: Wolves, brown bears, and people.

"Gee Whiz": A moose depends upon bacteria and other microscopic organisms that live in its digestive tract to help it get energy and minerals from its foods.



110. Caribou

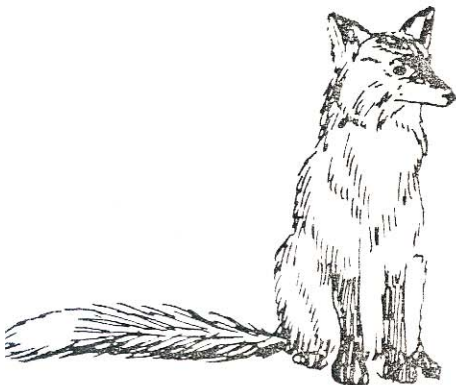
Traits: Moderately sized hoofed mammal, ears and tail short, mane on neck, antlers large and variable with forward projecting brow tines.

Habitat: Tundra and open coniferous forest.

Food: Grasses, sedges, lichens, mosses, leaves of willow and birch.

Eaten by: Wolves, bear, lynx, people.

"Gee Whiz": Both male and female caribou have antlers.



111. Red Fox

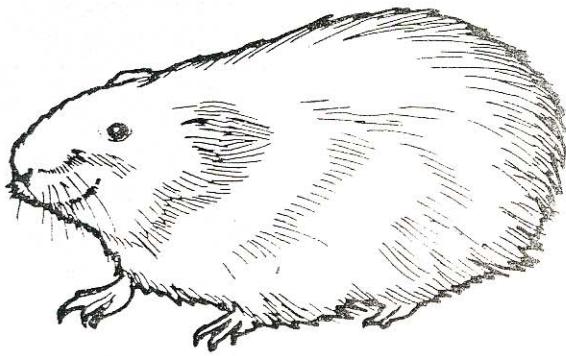
Traits: 35 - 44 inches (900 - 1,117 mm); 8 - 15 lbs. (3.6 - 6.8 kg). Dog-like mammal; 5 toes on front, 4 on hind feet; canine teeth; red to black fur; holds tail straight out when running.

Habitat: Muskegs, shrub areas, wet tundra, river and stream corridors.

Food: Voles, lemmings, snowshoe hares, muskrats, berries, insects, carrion from kills by larger carnivores, nesting/molting ducks, geese and other birds, and young birds.

Eaten By: Wolves, coyotes, lynx, wolverines. Eagles prey on young foxes.

"Gee Whiz": Foxes cache excess food when hunting is good.



102. Lemming

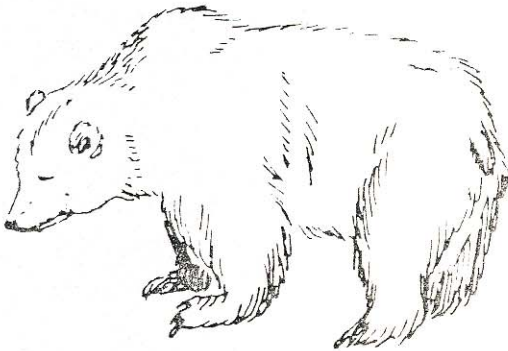
Traits: Small mouse-like animal with thick neck and short tail; two gnawing teeth (incisors) on upper and lower jaw separated by a space from cheek teeth.

Habitat: Alpine and lowland tundra and muskegs.

Food: Shoots and leaves of grasses and sedges and bark, twigs and buds of willow and dwarf birch. Insects, berries, and fungi are occasionally eaten.

Eaten by: Owls, jaegers, gulls, arctic foxes, and weasels.

"Gee Whiz": Collared lemmings turn white in the winter and grow shovel-like claws for digging through snow and ice.



108. Brown Bear

Traits: Heavy-set mammal with short tail, long snout, canine teeth, large hump on shoulders, long claws on forefeet; walks on heels rather than toes; brown fur. 6-7ft., 300-1,153 lbs.

Habitat: Tundra and forests throughout Alaska.

Food: In spring, over-wintered berries, roots, and fresh grasses and herbs; during summer and fall berries are important. Brown bears also kill and eat small mammals, caribou, moose, salmon and feed on carrion.

Eaten by: Other brown bears

"Gee Whiz": Brown bears survive winter by remaining dormant in an underground den.



114. People

Traits: Large mammals that walk erect on two legs and have forelimbs with opposable thumbs. Have little hair in comparison to other mammals.

Habitat: People use tools to make clothing, build shelters, catch or grow food, and thus are able to live in a wide variety of environments around the world.

Food: Moose, caribou, salmon, geese, many plants and domesticated animals.

Eaten by: Bears and other large, wild animals kill people on rare occasions, but people have no true predators.

"Gee Whiz": People have the ability to cooperate together to accomplish big jobs. People can work together to ensure there will be wildlife in the future.